FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 17 to April 23, 2016 (Week 16)

Overall Summary

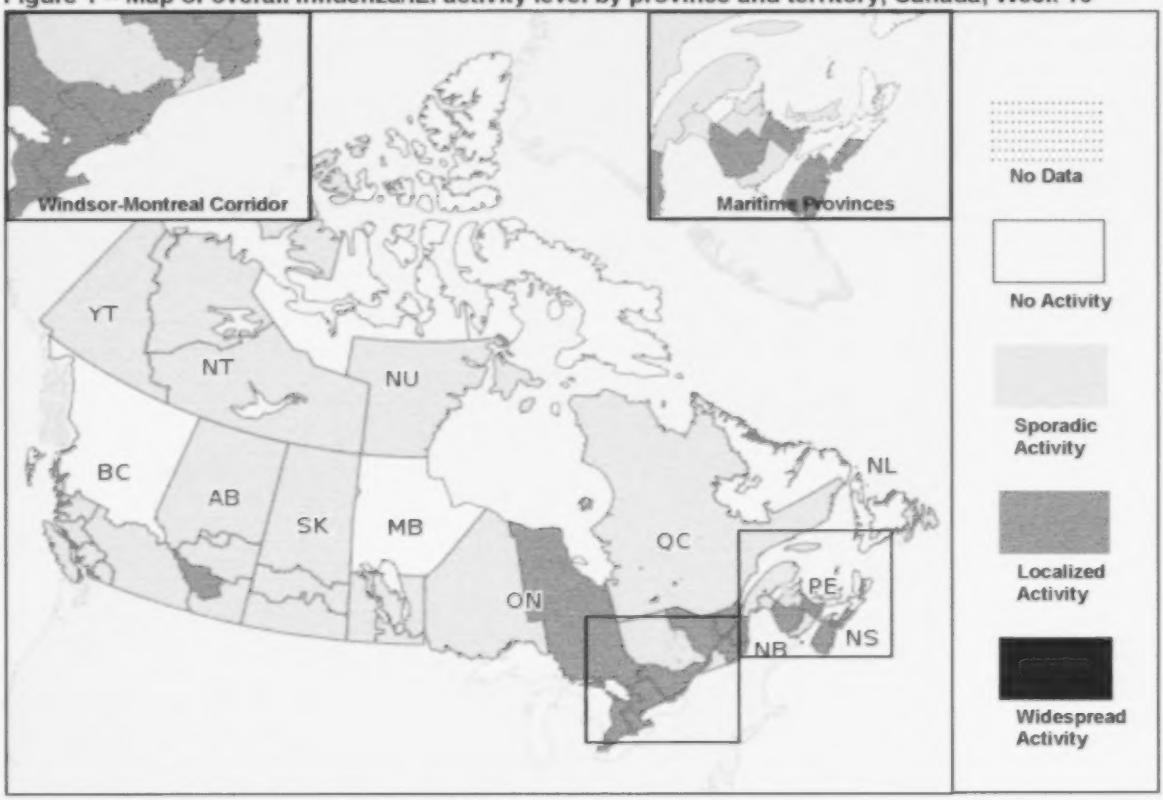
- In week 16, all influenza indicators remained similar to, or declined from the previous week.
- Elevated influenza activity was mostly reported in the Ontario, Quebec and Atlantic provinces.
- Many regions across Canada are reporting a greater proportion of influenza B detections. This increase in influenza B is expected as influenza B often shows up later in the flu season.
- Influenza B continues to account for a increasing proportion of hospitalizations among children and adults.
- Hospitalizations, ICU admissions and deaths among the pediatric population, while declining, continue to remain above expected levels based on the past several influenza seasons.
- For more information on the flu, see our Flu(influenza) web page.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

Influenza activity continues to be reported in the majority of regions in Canada; however, the number of regions reporting influenza activity decreased in week 16. Localized activity was reported in a total of 13 regions across five provinces. Sporadic activity levels were reported in 30 regions across all provinces and territories.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 16

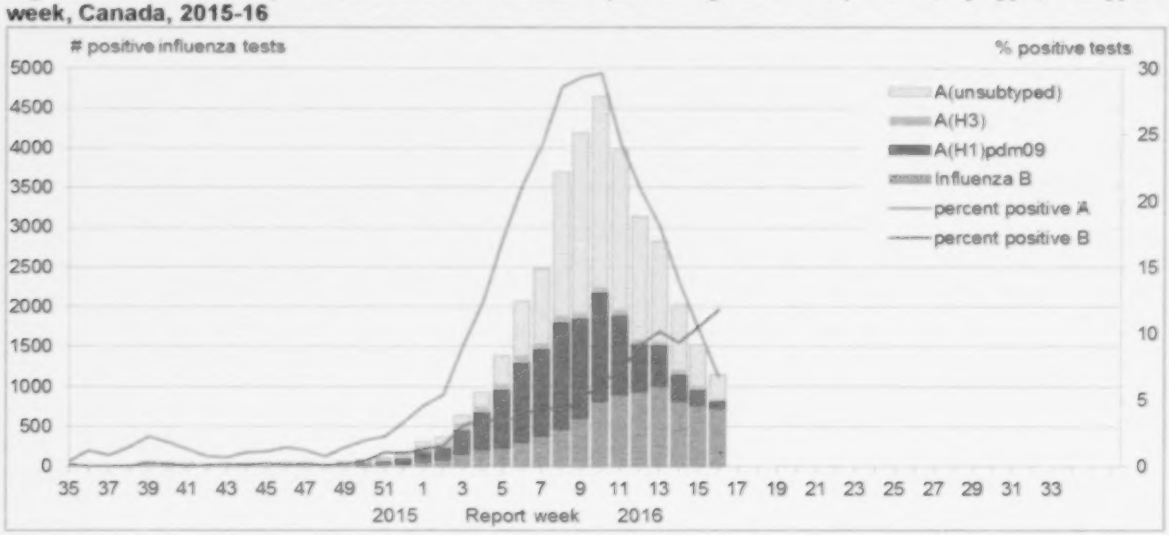


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

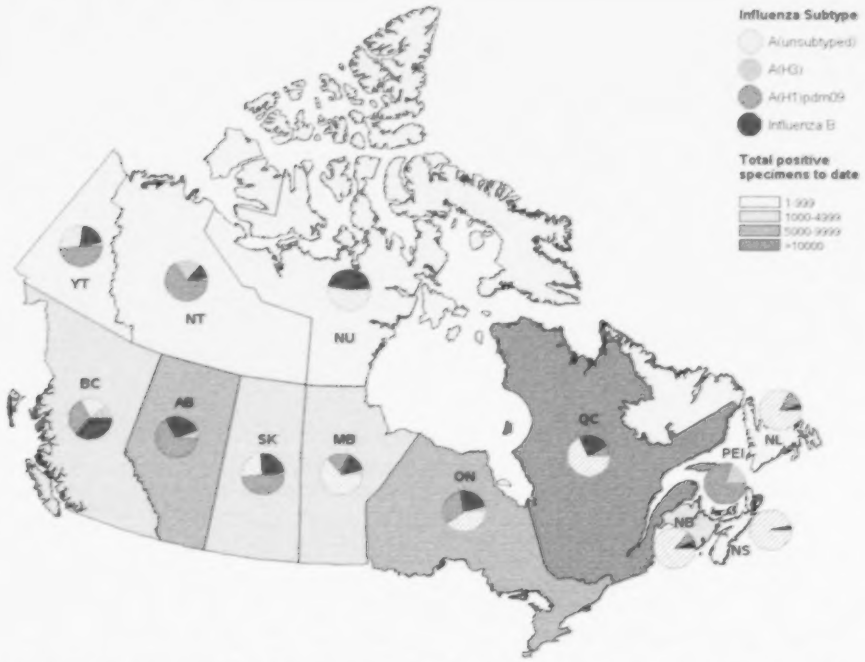
In week 16, the percentage of tests positive for influenza continued to decrease from the previous week [from 21% in week 15 to 19% in week 16], driven by the decline in influenza A. Compared to the previous five seasons, the percent positive (19%) reported in week 16 was above the five year average for that week and exceeded the expected levels (range 10.1%-16.2%). With the late start to the 2015-16 influenza season, these elevated levels are not unexpected.

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16



Nationally in week 16, there were 1,140 positive influenza tests reported. Influenza B continues to account for an increasing proportion of influenza detections accounting for 64% of detections in week 16. Detections remain predominantly influenza A in British Columbia and the Atlantic Region. To date, 76% of influenza detections have been influenza A and among those subtyped, the vast majority have been influenza A(H1N1) [92% (10866/11855)].

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16



Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

In week 16, individuals under the age of 44 accounted for 69% of influenza B detections.

To date this season, detailed information on age and type/subtype has been received for 31,063 cases. Children and teenagers (0-19) accounted for 47% of influenza B cases and approximately one third of all influenza cases. Children and teenagers (0-19), young adults (20-44) and middle-aged adults (45-64) accounted for approximately an equal proportion of influenza A(H1N1) cases (28%).

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16

Age groups (years)	Weekly (Apr. 17, 2016 to Apr. 23, 2016)					Cumulative (Aug. 30, 2015 to Apr. 23, 2016)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
<5	41	<5	<5	34	112	4450	1698	69	2683	1309	5761	19%
5-19	14	<5	x	12	153	2373	1017	99	1257	2231	4606	15%
20-44	51	10	0	41	114	5735	2717	154	2864	1876	7611	25%
45-64	65	13	<5	x	66	6255	2739	185	3331	905	7160	23%
65+	82	18	<5	x	105	4712	1587	417	2708	1212	5925	19%
Total	253	47	<5	202	550	23525	9758	924	12843	7533	31063	100%
Percentage[2]	32%	19%	2%	80%	68%	76%	41%	4%	55%	24%		

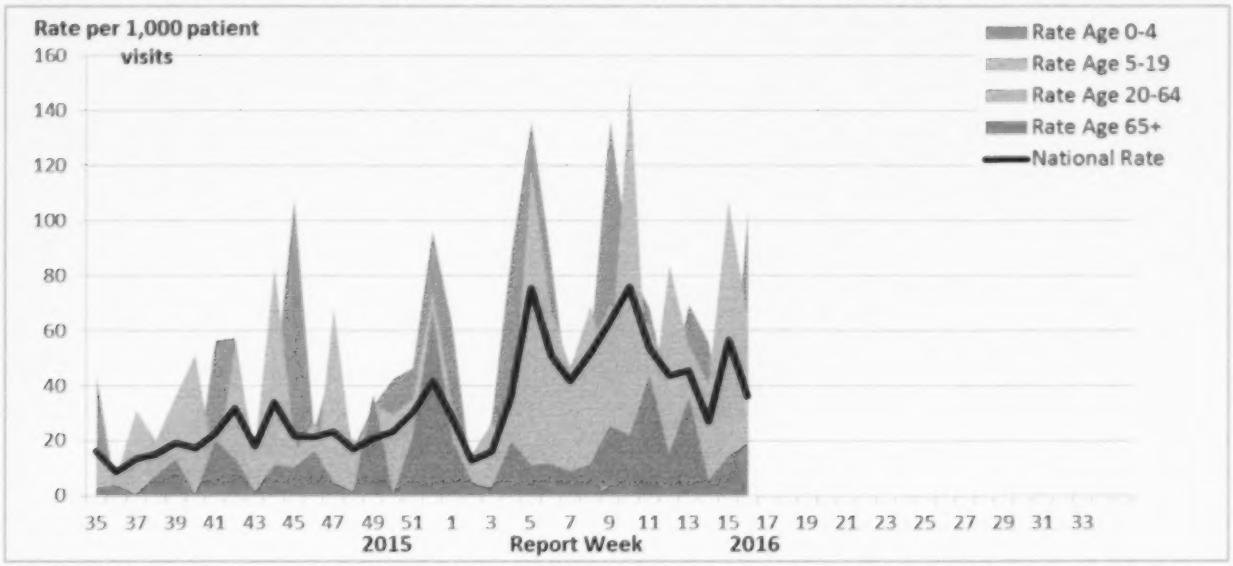
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
x - Suppressed to prevent residual disclosure.

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

Influenza-like Illness Consultation Rate

The national ILI consultation rate decreased from the previous week from 56.4 per 1,000 patient visits in week 15, to 36.1 per 1,000 patient visits in week 16. The highest ILI consultation rate was found in the 0-4 years age group (104.4 per 1,000) and the lowest was found in the ≥65 years age group (18.8 per 1,000) (Figure 4).

Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16

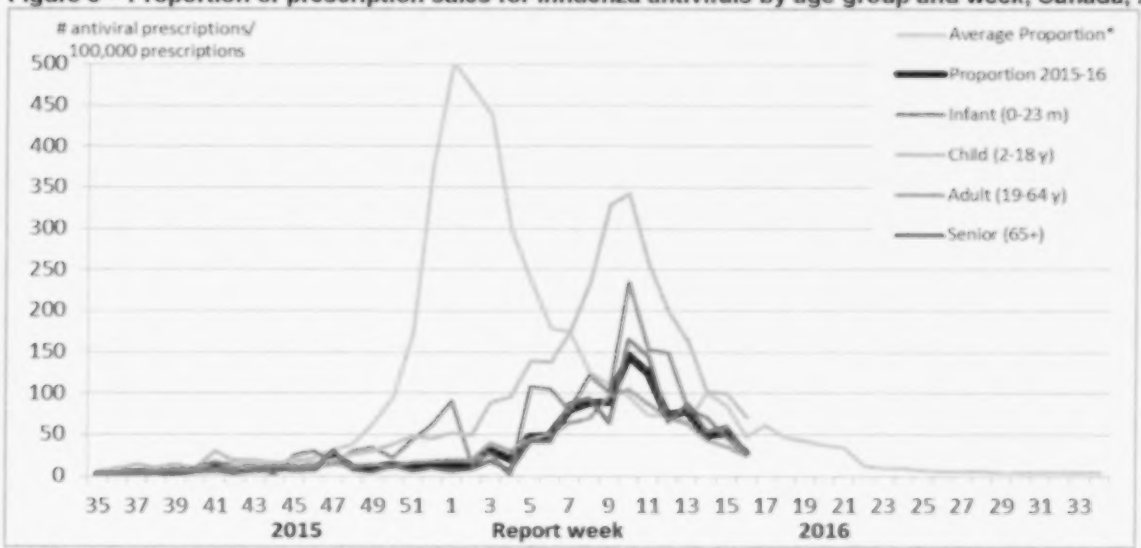


Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Pharmacy Surveillance

During week 16, the proportion of prescriptions for antivirals decreased from the previous week to 27.7 antiviral prescriptions per 100,000 total prescriptions, which is lower than the five year historical average for week 16. The proportion of prescriptions for antivirals remains highest among children. In week 16, the proportion reported among children was 71.5 per 100,000 total prescriptions.

Figure 5 – Proportion of prescription sales for influenza antivirals by age group and week, Canada, 2015-16



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu [oseltamivir] and Relenza [zanamivir]) and the total number of new prescriptions dispensed by Province/Territory and age group.

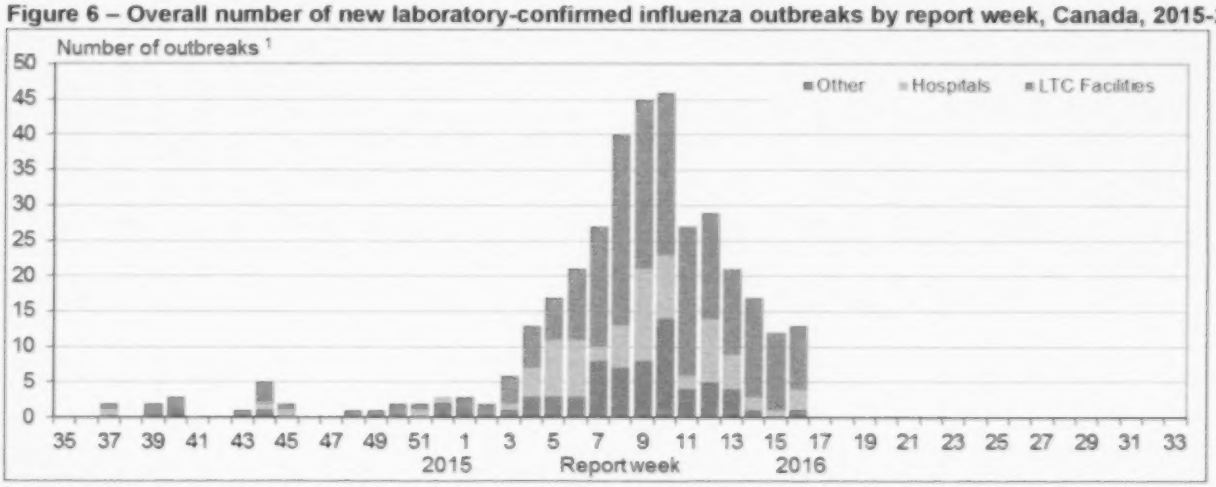
*The average weekly proportion includes data from April 2011 to March 2015.

Influenza Outbreak Surveillance

In week 16, 13 new laboratory confirmed influenza outbreaks were reported: nine in long-term care facilities (LTCF), three in hospitals and one in an institution or community setting. Of the outbreaks with known strains or subtypes, all three outbreaks were due to influenza B (two in LTCFs and one in an institution or community setting). Additionally, one ILI outbreak was reported in a school.

To date this season, 401 outbreaks have been reported. At week 16 in the 2014-15 season, 1,607 outbreaks were reported and in the 2013-14 season, 218 outbreaks were reported.

Figure 6 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of this report.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

In week 16, 33 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 7). The largest proportion of hospitalizations were in children aged 5-9 years, accounting for 30% of the hospitalizations. Similar to the trend of increased laboratory detections of influenza B, 82% of pediatric hospitalizations reported in week 16 were due to influenza B.

To date this season, 1,233 hospitalizations have been reported by the IMPACT network: 878 hospitalized cases (71%) were due to influenza A and 355 cases (29%) were due to influenza B. This season's count of pediatric hospitalizations is nearly double that reported up to week 16 (667) in the 2015-16 season. The current year total number of cases also exceeds the total number of cases reported in the past five seasons.

A total of 193 intensive care unit (ICU) admissions have been reported. Children aged 2 to 4 and 5 to 9 years accounted for 29% and 26% respectively of ICU admissions. A total of 128 ICU cases (66%) reported at least one underlying condition or comorbidity. Eight influenza-associated deaths have been reported.

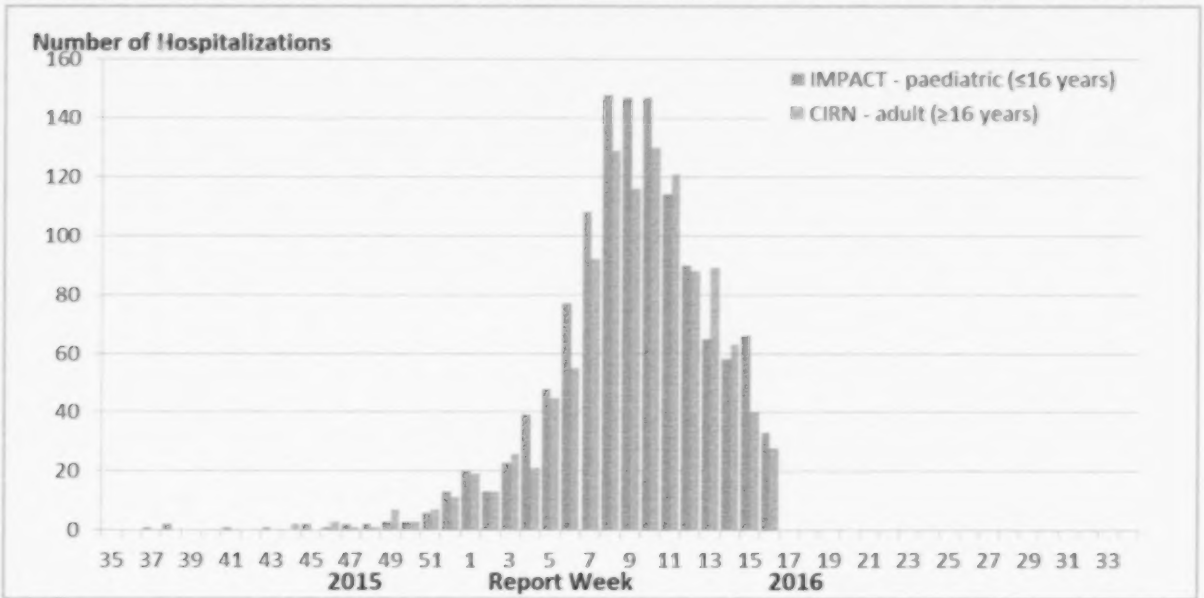
Table 2 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16*

Age Groups	Cumulative (30 Aug. 2015 to 23 Apr. 2016)					
	Influenza A				Influenza B	Influenza A and B (#(%))
	A Total	A(H1) pdm09	A(H3)	A (UnS)	B Total	
0-5m	118	32	5	81	29	147 (12%)
6-23m	271	73	7	191	71	342 (28%)
2-4y	250	79	<5	x	96	346 (28%)
5-9y	181	47	<5	x	115	296 (24%)
10-16y	58	18	<5	x	44	102 (8%)
Total	878	249	21	608	355	1233 (100%)

x - Suppressed to prevent residual disclosure

*Not included in Table 2 are two IMPACT cases that were due to co-infections of influenza A and B.

Figure 7 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, pediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)*



*Not included in Figure 7 are two IMPACT cases that were due to co-infections of influenza A and B.

Adult Influenza Hospitalizations and Deaths

In week 16, 28 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS) (Figure 7). The largest proportion of hospitalizations was in adults 65+ years of age (53%) and due to influenza A (53%). In recent weeks, the weekly number of hospitalizations reported by CIRN has been decreasing and an increasing proportion of hospitalizations have been due to influenza B.

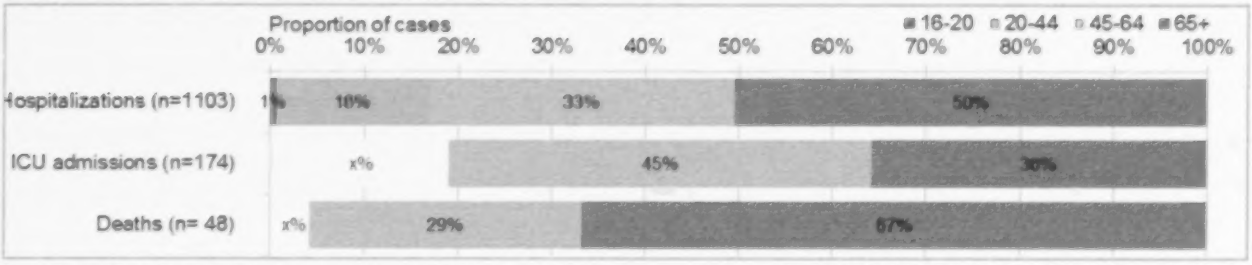
To date this season, 1,108 hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (82%) and the largest reported proportion was among adults ≥65 years of age (50%). One hundred and seventy-four intensive care unit (ICU) admissions have been reported of which 118 cases reported at least one underlying condition or comorbidity. A total of 48 deaths have been reported this season with the majority of deaths reported in adults ≥65 years of age (67%).

Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by CIRN-SOS, Canada, 2015-16

Age groups (years)	Cumulative (Nov. 1, 2015 to 23 Apr. 2016)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	x	<5	0	<5	<5	7 (1%)
20-44	140	48	<5	x	39	179 (16%)
45-64	321	97	<5	x	40	361 (33%)
65+	443	123	23	297	113	556 (50%)
Unknown	<5	0	0	<5	<5	5 (%)
Total	912	273	27	612	196	1108
%	82%	30%	3%	67%	18%	100%

x - Suppressed to prevent residual disclosure

Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group (≥16 year of age), CIRN-SOS, Canada 2015-16



Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

x - Suppressed to prevent residual disclosure

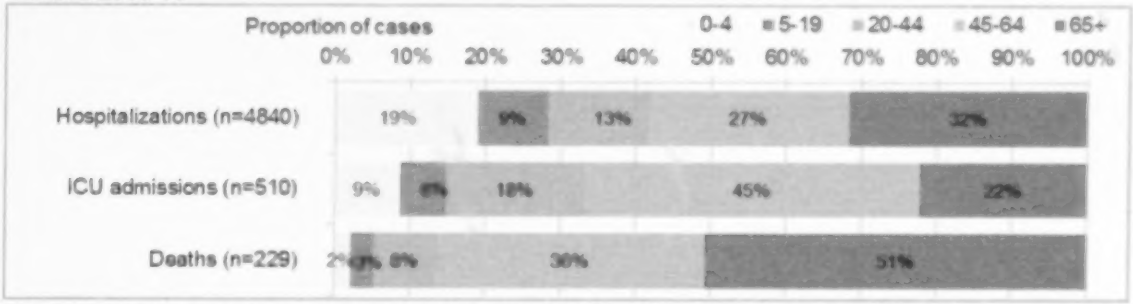
Provincial/Territorial Influenza Hospitalizations and Deaths

In week 16, 129 hospitalizations were reported by participating provinces and territories*. Influenza B accounted for the greatest proportion of hospitalizations, accounting for 55% of hospitalizations reported in week 16. The largest proportion of cases reported was in adults 65+ years of age (37%). Among hospitalizations for influenza B, children represented 35% of cases.

Since the start of the 2015-16 season, 4,840 laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 3,929 hospitalizations (81%) were due to influenza A and 911 (19%) were due to influenza B. Of the 510 ICU admissions reported, 267 (52%) were due to influenza A(H1N1). A total of 229 deaths have been reported; all but 30 were associated with influenza A.

Overall this season, hospitalizations have been reported more frequently among adults ≥65 years of age. The largest proportion of ICU admissions was reported in adults 45-64 years of age and the highest proportion of fatal cases was reported in adults ≥65 years of age. Pediatric (0-19 years) and young to middle-aged adults (20-44 years) accounted for 42% of all hospitalizations and 14% of all deaths reported to date this season. Similar to findings from the IMPACT network, there have been more pediatric hospitalizations reported to date compared to the year-end totals in each of the previous four influenza seasons.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group, Canada 2015-16



* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

x - Suppressed to prevent residual disclosure

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 2,117 influenza viruses [194 A(H3N2), 1,188 A(H1N1) and 735 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assays, 50 A(H3N2) viruses were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 144 A(H3N2) viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013. A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

Influenza A (H1N1): All of the 1,188 A(H1N1) viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

Influenza B: A total of 154 influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. A total of 581 influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The recommended components for the 2015-2016 Northern Hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.

The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results HI testing compared to the reference influenza strains recommended by WHO.

Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 1,288 influenza viruses for resistance to oseltamivir, 1,290 for resistance to zanamivir and 1,349 influenza viruses for resistance to amantadine. All but eight tested viruses were sensitive to oseltamivir. The eight H1N1 viruses resistant to oseltamivir had a H275Y mutation. All viruses tested for resistance were sensitive to zanamivir. All but two influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	157	0 (0%)	157	0 (0%)	201	200 (99.5%)
A (H1N1)	794	8 (1%)	796	0 (0%)	1148	1147 (99.9%)
B	337	0 (0%)	337	0 (%)	NA[1]	NA[1]
TOTAL	1288	8 (0.6%)	1290	0 (0%)	1349	1347 (99.9%)

[1]NA: Not Applicable

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2015-2016 Season

Abbreviations Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Government of Canada Influenza webpage under Weekly influenza reports.

Ce rapport est disponible dans les deux langues officielles.